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14. ABSTRACT
This study seeks to derive and validate an innovative public health surveillance system. Years of pilot work with the AF found that it is possible to derive accurate complex statistical estimation algorithms from data sets containing both nonsensitive information and assessments of secretive problems. These algorithms can then be applied to data sets that do not directly assess secretive problems to accurately estimate problem prevalences. In other words, a single survey administration and the algorithms can obviate the need for future secretive behavior surveys, making this a cost effective and sustainable planning tool. Further, the data set to be used for algorithm derivation will also be ideal to test a series of specific hypotheses about individual, family, workplace, and community risk and protective factors for each of the secretive problems.

15. SUBJECT TERMS
Readiness, prevention, risk factors

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Table of Contents

 INTRODUCTION:
       Of the many concerns about AF's force behavioral health protection, AF commanders identify secretive problems (family maltreatment, suicidality, and problematic alcohol/drug use) as 3 of the top 5 concerns. These problems are prevalent — the PRMRP-funded pilot study for the current proposal revealed that 25% of AF members reported at least one secretive problem at a serious level, yet only 1 out of 6 of these airmen report that anyone in the AF knows that they are having problems. Yet, the AF currently has no system to routinely track prevalences. Further, enormous gaps exist in our knowledge about risk and protective factors for these problems, especially in military communities. This study seeks to derive and validate an innovative public health surveillance system. Years of pilot work with the AF found that it is possible to derive accurate complex statistical estimation algorithms from data sets containing both nonsensitive information and assessments of secretive problems. These algorithms can then be applied to data sets that do not directly assess secretive problems to accurately estimate problem prevalences. In other words, a single survey administration and the algorithms can obviate the need for future secretive behavior surveys, making this a cost effective and sustainable planning tool. Further, the data set to be used for algorithm derivation will also be ideal to test a series of specific hypotheses about individual, family, workplace, and community risk and protective factors for each of the secretive problems.

BODY:

Year 2
We were faced a few a challenges in developing and running our algorithm analyses. Besides staff turnover, which delayed continuing analyses for a couple of weeks at the beginning of this funding period, we also found an error in our syntax which required us to re-run large portions of data. We are now fortunate to be able to run analyses from the University's Main Frame. This will give us more computing power and will significantly decrease computing time. We expect to catch up with analyses within the next few weeks.

In Progress   Task 7 Derive, validate, and develop confidence intervals for the next eight algorithms:
- Female to Male Partner Physical Abuse (substantiatable)
- Female to Male Partner Physical Abuse (sub-threshold)
- Female to Male Partner Emotional Abuse
- Parent to Child Physical Abuse (substantiatable)
- Parent to Child Physical Abuse (sub-threshold)
- Parent to Child Emotional Abuse
- Parent to Child Neglect.

In Progress   Task 8 Test all hypothesized risk/protective effects and develop and validate regression and structural equation modeling based models for next three dependent variables:
- Child Physical Abuse
- Child Emotional Abuse
- Child Neglect

Complete   Task 9 Present project goals, progress, and challenges at meetings with Military Advisory Panel in June and December, 2008.

In Progress   Task 10 Write reports detailing algorithms developed and risk/protective factor analyses completed in Year 2 and brief to AF leadership.

Year 3
In Progress   Task 11 Derive, validate, and develop confidence intervals for the next seven algorithms:

- AD suicidality
- AD drug use (prescription drug misuse)
- AD drug use (illicit drugs)
- AD problem drinking
- AD problem drinking (sub-threshold)
- Male to Female Any Partner Abuse
- Female to Male Any Partner Abuse

In Progress   Task 12 Test all hypothesized risk/protective effects and develop and validate regression and structural equation modeling based models for next four dependent variables:
- Suicidal Behaviors (In Progress)
- Alcohol Dependence (Largely Complete)
- Comorbid Partner Physical and Child Physical Abuse (No progress to date)

KEY RESEARCH ACCOMPLISHMENTS: Bulleted list of key research accomplishments emanating from this research.

- Analyses of unique risk factors for the following targets are complete and results are written: male to female partner physical abuse, female to male partner physical abuse, male to female emotional abuse, female to male emotional abuse, alcohol abuse, and suicidal behaviors. Regression models for all of the above listed targets have been cross-validated as well.
- Buffering protective effects and additive risk effects have been identified and cross-validated for male to female partner physical abuse, female to male partner physical abuse, male to female emotional abuse, female to male emotional abuse, alcohol abuse, and suicidal behaviors (although results are still being carefully analyzed and are in the process of being written up for dissemination).
- Models using structural equation modeling have been developed, tested, and cross-validated for male to female partner physical abuse, female to male partner physical abuse, and alcohol abuse. Preliminary models have also been developed for emotional abuse.

REPORTABLE OUTCOMES: Provide a list of reportable outcomes that have resulted from this research to include:

Conference Presentations:

Foran, H.M, Slep, A.M.S, Heyman, R. E., Snarr, J. (2008, July). Unique Risk and
     Protective Factors of partner Aggression and Abuse in a Large Survey sample. International Family
     Violence and Child Victimization Research Conference. Portsmouth, New Hampshire. Presented by A.
     Slep.

Snarr, J., Slep, A.M.S, Heyman, R. E., Foran, H. M. (2008, July) Risk and Protective
     Factors of Child Abuse in A Large Survey Sample. International FamilyViolence and Child
     Victimization Research Conference. Portsmouth, New Hampshire. Presented by A. Slep.

Foran, H., Slep, A.M.S, Heyman, R.E., Snarr, J. (2008, November). Unique Risk and
     Protective Factors of partner Aggression and Abuse in a Large Survey sample. Presented at the Annual
     Association for Advancement of Behavior and Cognitive Therapy Convention, Orlando, FL.

Heyman, R. E., & Slep, A.M.S, (2008, July). Gender Differences in Reporting Partner Aggression and Diagnosable "Abuse". International FamilyViolence and Child Victimization Research Conference. Portsmouth, New Hampshire.

Heyman, R. E., & Slep, A.M.S, (2008, July). Gender Differences in Reporting Partner Aggression and Diagnosable "Abuse". . Presented at the Annual Association for Advancement of Behavior and Cognitive Therapy Convention, Orlando, FL.

Manuscripts In Progress:

Slep, A.M.S., Foran, H., Heyman, R.E, & Snarr, J.D. (submitted for publication). Risk and protective factors for partner aggression in a large scale survey of the US Air force.

Snarr, J.D , Slep, A.M.S., & Heyman, R. E.(submitted for publication). Recent Suicidal Ideation and Suicide Attempts in a Large–Scale Survey of the U.S. Air Force: Prevalences and Demographic Risk Factors.

Slep, A.M.S., Foran, H., Heyman, R.E, & Snarr, J.D. (under revision). Risk and protective factors for clinically significant intimate partner violence in a population survey of the US Air Force.

Foran, H., Slep, A. M.S., & Heyman, R.E. (under review with Public Affairs). Hazardous Alcohol Use among Active Duty Air Force Personnel: Identifying Unique Risk and Promotive Factors.

Foran, H., Slep, A. M.S., & Heyman, R.E. (under review with Public Affairs). Prevalences of Partner Aggression and Abuse in a Representative Military Sample.

Foran, H., Slep, A. M.S., & Heyman, R.E. (in preparation). A Model of Hazardous Drinking and Military Community Functioning – Identifying Mediating Risk Factors.

Slep, A.M.S., Foran, H.M., & Heyman, R.E. (in preparation). Emotional abuse victimization among active duty Air Force personnel: Identifying Risk and Protective Factors.

Foran, H., Slep, A. M.S., Heyman, R.E.. & Snarr, J.D. (in preparation). Intimate Partner Violence and Problem Drinking in the Military: Understanding Protective Factors.

CONCLUSION: The purpose of this project is to Develop and validate the accuracy of an innovative surveillance system (AF-wide) for family maltreatment, suicidality, and problematic alcohol/drug use. A second purpose is to test a series of hypotheses regarding risk and protective factors for secretive problems in AF communities.

A detailed description of current conclusions is not available until reports have been reviewed by Public Affairs. Tabular presentation of results that have been reviewed by Public Affairs and are available for dissemination are presented in Appendix I. To summarize, hypothesized risk factors across individual, family, workplace, and community were significantly related to men's perpetration of physical abuse against their partner. Only risk factors from the individual and family levels were significantly related to women's perpetration against their partner. These results imply somewhat different risk profiles for men and women. The current work adds to the

literature on understanding clinically significant partner violence among military families by examining a large number of risk and protective factors across ecological levels that had not yet been evaluated.

REFERENCES: List all references pertinent to the report using a standard journal format (i.e. format used in *Science, Military Medicine*, etc.).

Not applicable at this time, although several of the above listed "REPORTABLE OUTCOMES" are complete manuscripts that are under review for publication or soon to be submitted for publication review.

APPENDICES:

Appendix I: Tabular Results of Risk and Protective Factor Analyses of Partner Physical Abuse

SUPPORTING DATA: NA

Appendix I: Tabular Results of Risk and Protective Factor Analyses of Partner Physical Abuse
Bivariate Odds Ratios among Predictor Variables and Partner Physical Abuse

	Men			Women		
Individual Level	b	OR	*M* (*SD*)	b	OR	*M* (*SD*)
Alcohol Problems	0.55	1.73***	3.61(3.80)	0.23	1.26	2.50(2.73)
Years in Military	-0.44	0.64***	10.93(7.17)	-0.47	0.63*	7.46(6.04)
Financial Stress	0.42	1.53***	1.84(0.88)	0.41	1.50**	1.74(0.85)
Depressive Symptoms	0.47	1.60***	1.50(0.60)	0.19	1.21	1.62(0.64)
Personal Coping	-0.52	0.60***	4.18(0.48)	-0.41	0.66**	4.04(0.51)
Physical Well-being	-0.25	0.78**	4.13(0.71)	-0.16	0.85	4.02(0.73)
Spirituality/Religiosity	-0.26	0.77*	3.07(1.14)	-0.01	0.99	3.14(1.06)
Family Level						
Relationship Satisfaction	-0.61	0.54***	5.83(1.09)	-0.55	0.58***	5.89(1.13)
Parental Status	-0.93	0.39***	57.1% [a]	-0.16	0.85	47.9% [a]
Support from Significant Other	-0.31	0.74***	4.90(1.03)	-0.54	0.58**	5.23(0.93)
Family Income (US $ monthly)	-0.48	0.62***	6229(3301)	-0.34	0.71*	7338(4640)
Marital Length	-0.48	0.62***	8.42(6.82)	-0.87	0.42*	5.54(5.66)
Spouse Support for Deploy.	-0.55	0.58***	3.13(0.80)	-0.19	0.83	3.14(0.90)
Family Coping	-0.48	0.62***	5.00(0.97)	-0.50	0.61**	5.22(0.87)
Parent Child Relations	-0.34	0.71*	5.08(0.72)	-0.31	0.74	5.23(0.71)
Child Physical Aggression	0.73	2.08***	1.08(1.21)	0.22	1.25	1.20(1.35)
Organization Level						
Satisfaction with Air Force	-0.33	0.72***	4.17(1.08)	-0.20	0.82	4.27(1.15)
Workgroup Cohesion	-0.33	0.72***	4.13(1.10)	0.03	1.03	3.93(1.14)
Work Relations	-0.26	0.77**	3.94(0.85)	0.06	1.06	3.76(0.92)
Weeks Deployed	0.01	1.01	8.18(11.13)	-0.49	0.61	5.20(9.31)
Hours Worked	0.06	1.06	41.02(4.38)	-0.39	0.67	40.59(3.16)
Support from Leadership	-0.23	0.79**	4.11(0.88)	0.03	1.03	4.09(0.88)
Community Level						
Community Unity	-0.27	0.76**	4.09(0.83)	0.09	1.09	4.14(0.83)
Support from Neighbors	-0.35	0.71***	4.55(1.02)	-0.19	0.83	4.40(1.06)
Support for Youth	-0.17	0.84	4.31(0.97)	-0.25	0.78	4.38(0.95)
Support from Formal agencies	-0.19	0.82*	4.38(0.93)	0.08	1.08	4.54(0.91)
Social Support	-0.40	0.67***	4.25(1.38)	-0.19	0.83	4.22(1.48)
Community Safety	-0.10	0.91	5.02(0.76)	-0.27	0.77	4.97(0.80)
Community Stress	0.18	1.20*	4.11 (0.91)	0.00	1.00	4.13(0.91)

Note. Means and standard deviations are presented for the whole sample{N = 34713 men and N = 8031 women for all variables except those that were only answerable by married individuals (marital length and spouse deployment support: n = 29992 men and n = 5861 women), married individuals or parents (family coping: n = 30567 men and n = 6394 women), or parents (child physical aggression and parent child relations (n=22446 men and n = 4073 women).} Odds ratios are presented for the development subsample {n = 858 men and n = 257 women for all variables except those that were only answerable by married individuals (marital length and spouse deployment support: n = 684 men and n = 177 women), married individuals or parents (family coping: n = 709 men and n = 195 women), or parents (child physical aggression and parent child relations (n = 490 men and n = 123 women).}

[a] Represents the percentage of men and women with minor children living with them in the sample.

*** p <.001, ** p <.01, * p <.05.

Stepwise Regression Analyses of Men's Partner Abuse

	Development Sample			Validation Sample		
	b	*SE*	*Wald's statistic*	*b*	*SE*	*Wald's statistic*
Within Ecological Levels						
Individual Level						
Depressive Symptoms	0.22	0.11	4.17*	0.23	0.09	6.20*
Alcohol Problems	0.46	0.08	34.90***	0.29	0.07	16.40***
Financial Stress	0.27	0.09	9.68**	0.26	0.08	10.59**
Personal Coping	-0.26	0.10	6.60*	-0.20	0.12	2.72
Family Level						
Parental Status	-0.89	0.21	17.20***	-0.55	0.22	6.43*
Family Income	-0.38	0.12	10.86***	-0.55	0.13	19.28***
Relationship Satisfaction	-0.69	0.09	53.25***	-0.51	0.08	44.48***
Organization Level						
Satisfaction with Air Force	-0.29	0.07	17.42***	-0.42	0.09	22.68***
Work Group Cohesion	-0.26	0.08	10.66**	0.04	0.10	0.12
Community Level						
Social Support	-0.36	0.09	15.02***	-0.07	0.09	0.71
Community Unity	-0.21	0.10	4.31*	-0.26	0.09	7.82**
Overall (Across Ecological Levels)						
Relationship Satisfaction	-0.54	0.10	27.44***	-0.44	0.08	2.03***
Alcohol problems	0.40	0.09	22.09***	0.25	0.08	9.50**
Financial Stress	0.34	0.09	14.39***	0.34	0.08	16.00***
Social Support	-0.33	0.11	9.30**	-0.02	0.09	0.06
Parental Status	-0.90	0.22	16.27***	-0.77	0.22	12.67***

*** $p < .001$, ** $p < .01$, * $p < .05$.

Stepwise Regression Analyses of Women's Partner Physical Abuse

	Development Sample			Validation Sample		
	b	*SE*	*Wald's statistic*	*b*	*SE*	*Wald's statistic*
Within Ecological Levels						
Individual Level						
Financial Stress	0.34	0.15	5.40*	0.35	0.13	7.93**
Personal Coping	-0.35	0.15	5.39*	-0.26	0.12	4.88*
Family Level						
Family Income	-0.36	0.14	6.49*	-0.44	0.15	8.43**
Relationship Satisfaction	-0.56	0.12	1.61***	-0.39	0.15	6.62*
Organization Level						
None are significant						
Community Level						
None are significant						
Overall (Across Ecological Levels)						
Relationship Satisfaction	-0.62	0.15	4.18***	-0.38	0.15	2.57*
Family Income	-0.45	0.17	-2.67**	-0.44	0.15	-2.92**

*** $p < .001$, ** $p < .01$, * $p < .05$.